

S/N 10/038,125

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: CHOE, G. Examiner: Unknown
Serial No.: 10/038,125 Group Art Unit: 2652
Filed: 1/2/02 Docket No.: SJO920010040US1
501.388US01

Title: A METHOD AND APPARATUS FOR PROVIDING PRECISE
CONTROL OF MAGNETIC COUPLING FIELD IN NiMn TOP SPIN
VALVE HEADS AND AMPLITUDE ENHANCEMENT

CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on

4-1-02

Michael T. Wallace

Name

Signature

SUBMISSION OF FORMAL DRAWINGS

Box Missing Parts
Assistant Commissioner for Patents
Washington, D.C. 20231



Dear Sir:

Enclosed herewith are eleven (11) sheet(s) of formal drawings for the above-referenced patent application in response to the communication dated February 1, 2002.

Respectfully submitted,

ALTERA LAW GROUP, LLC
6500 City West Parkway, Suite 100
Minneapolis, Minnesota 55344-7701
952-253-4127

Date: 4-1-02

By: Michael T. Wallace
Reg. No. 45,420

MTW/tmj

Inventor: Choe, G.

Title: A METHOD AND APPARATUS FOR PROVIDING PRECISE CONTROL OF MAGNETIC COUPLING
FIELD IN NiMn SPIN VALVE HEADS AND AMPLITUDE ENHANCEMENT

Docket no.: SJ09-2001-0040US1 / 501.388US01 Serial Number 10/038,125

1/11

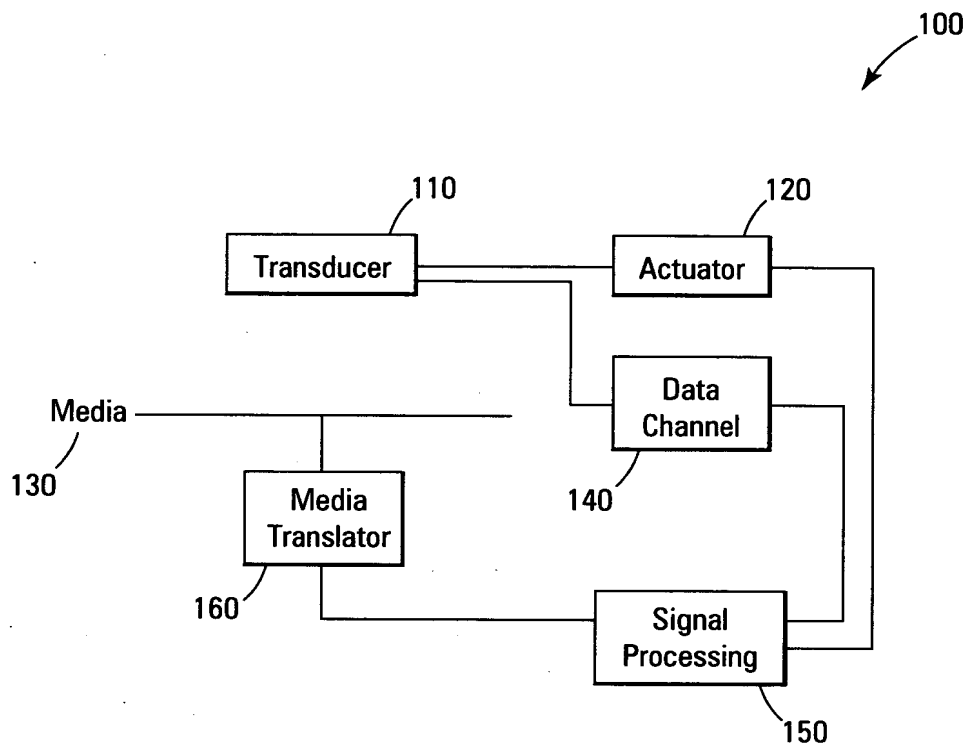


Fig. 1

2/11

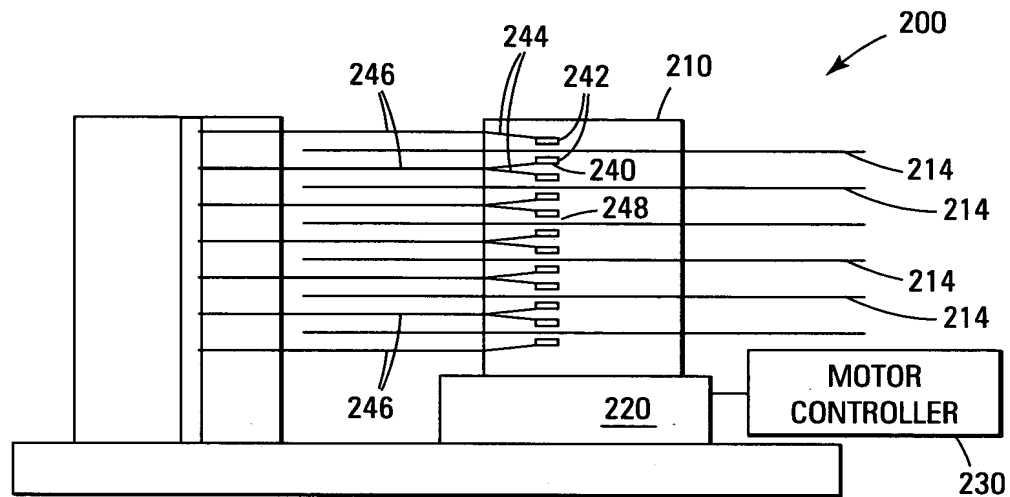


Fig. 2

3/11

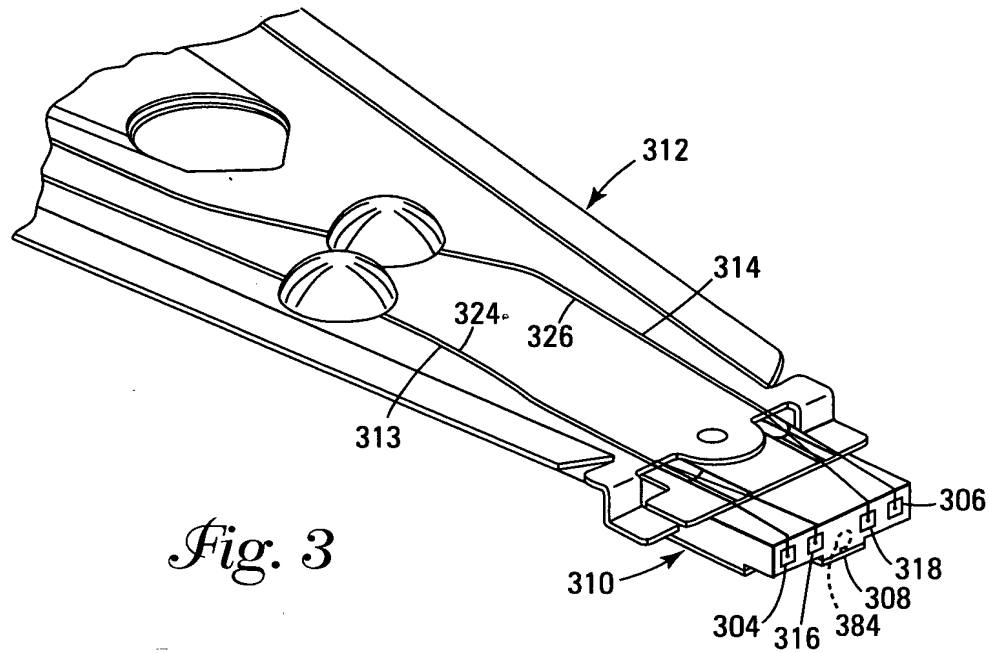


Fig. 3

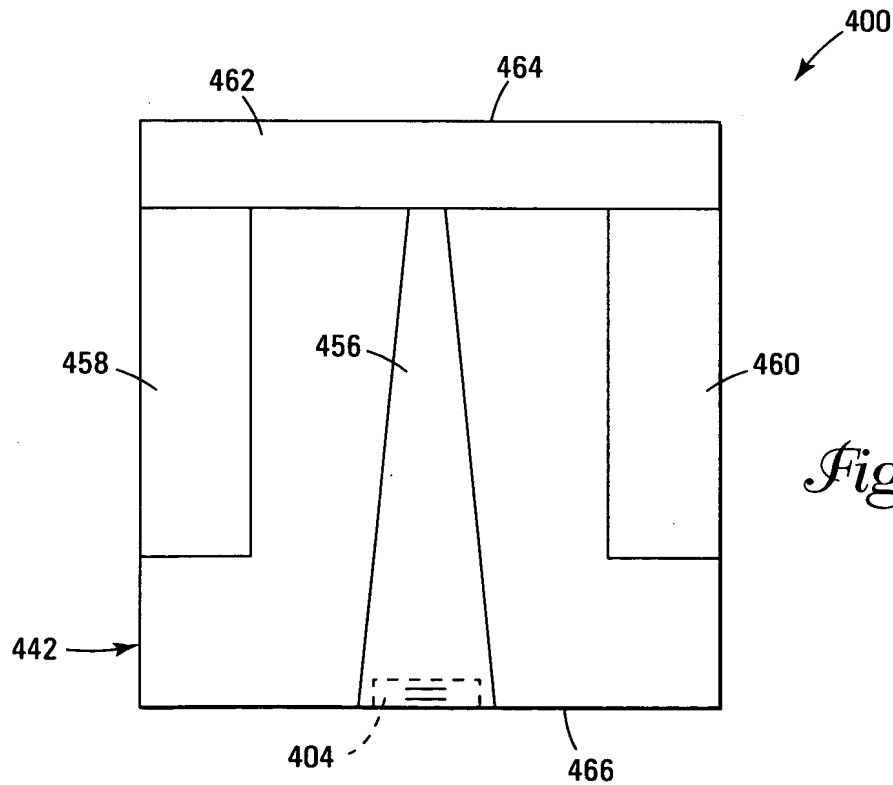


Fig. 4

[illegible]

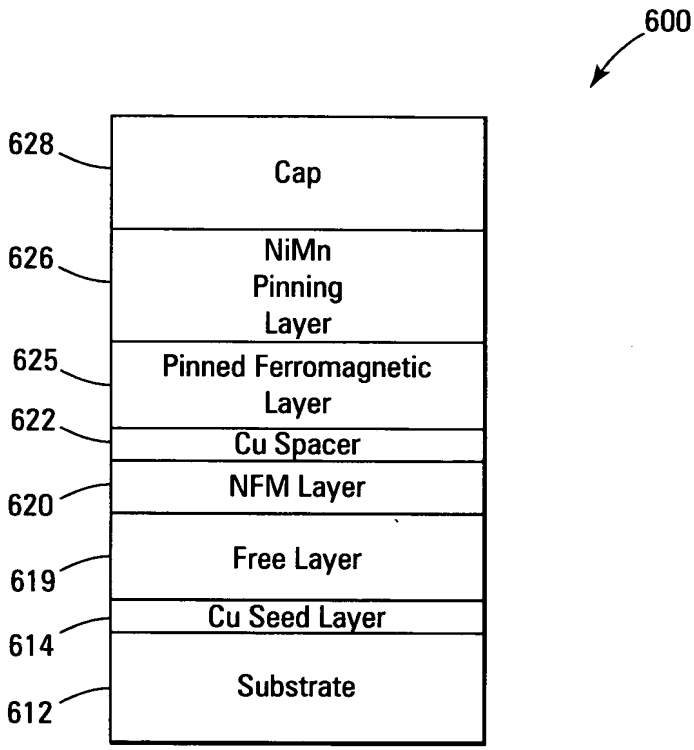
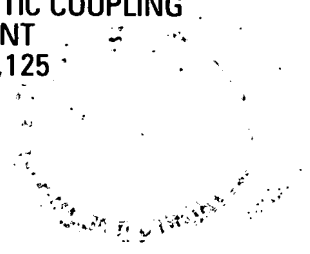


Fig. 6

2009090323001

6/11

	As-deposited free layer		Annealed free layer at 250°, 5 hrs	
	λ_i	λ_b	λ_i	λ_b
Without oxidation	$6 \times 10^{-5} \text{ \AA}$	$-3.2 \times 10^{-6} \text{ \AA}$	$8 \times 10^{-5} \text{ \AA}$	$-0.9 \times 10^{-6} \text{ \AA}$
With Cu seed and spacer oxidation	$4 \times 10^{-5} \text{ \AA}$	$-3.1 \times 10^{-6} \text{ \AA}$	$4 \times 10^{-5} \text{ \AA}$	$-1.5 \times 10^{-5} \text{ \AA}$

Fig. 7

7/11

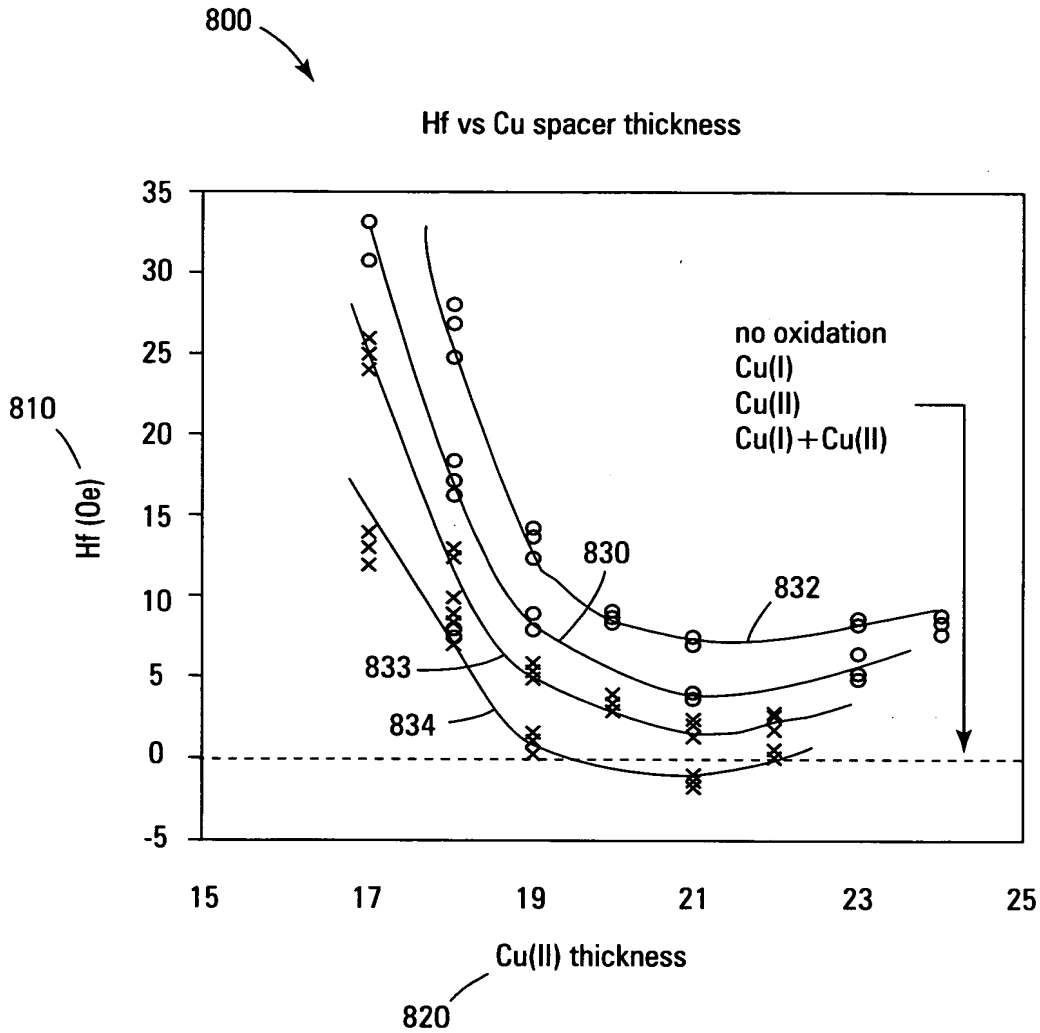


Fig. 8

8/11

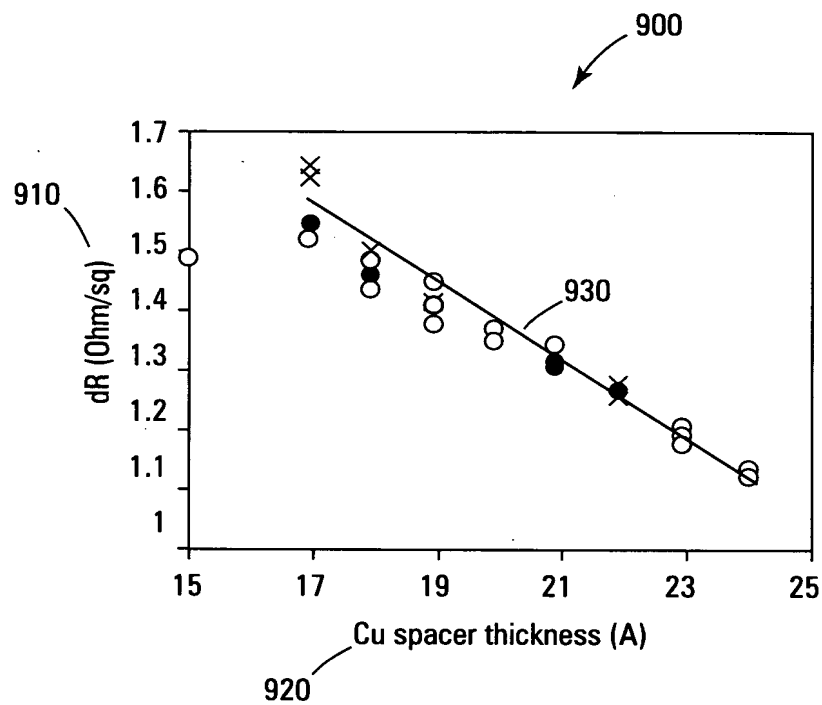


Fig. 9

20090924 14:33:00

9/11

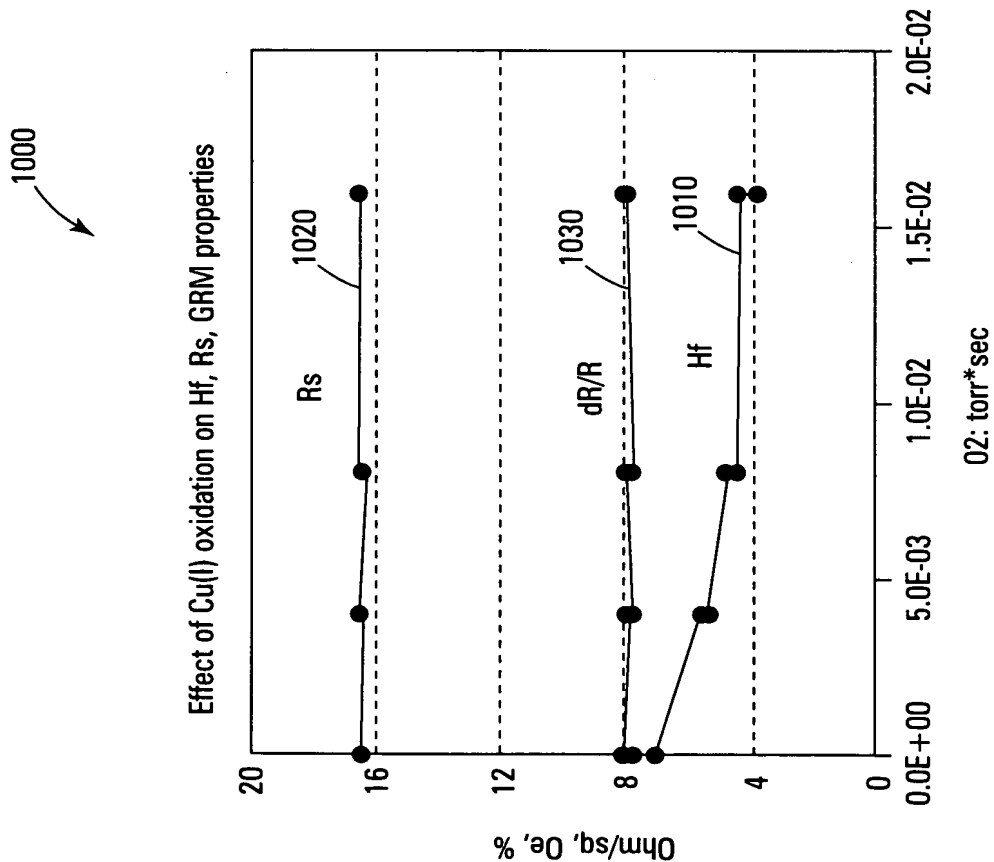
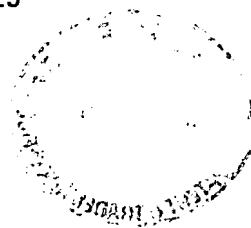
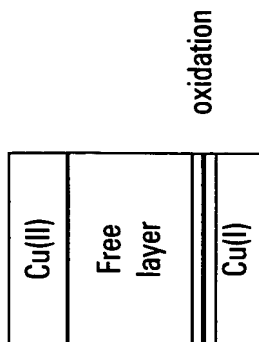
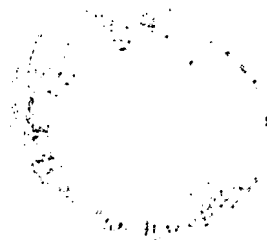


Fig. 10



10/11



1100

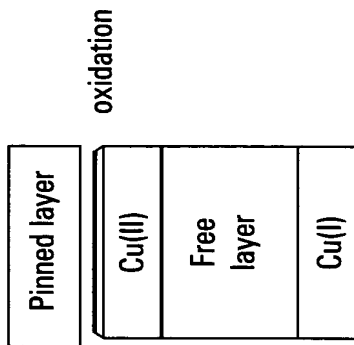
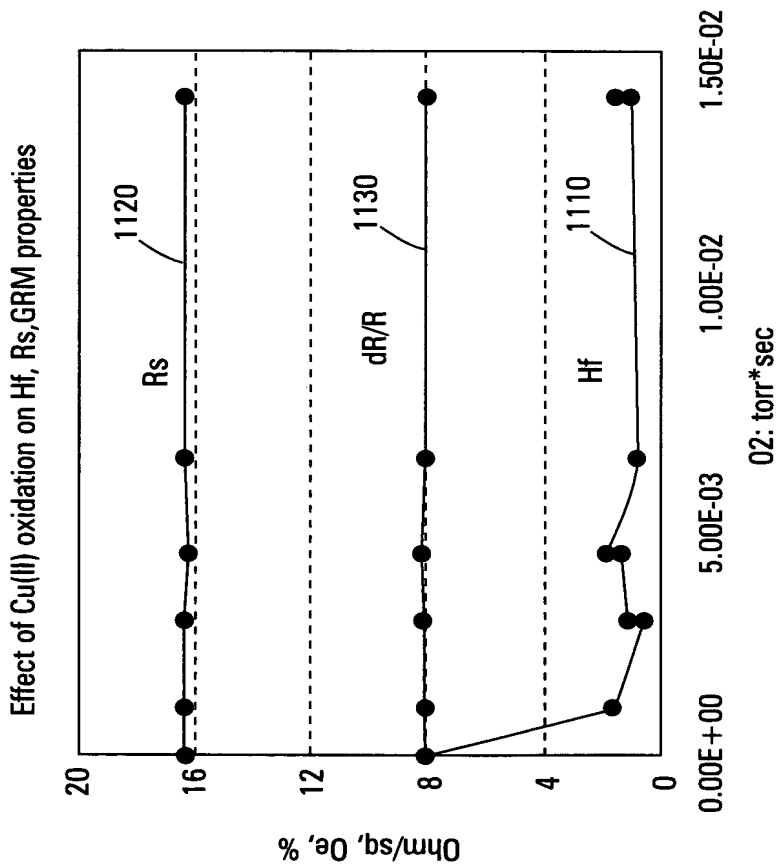


Fig. 11

11/11

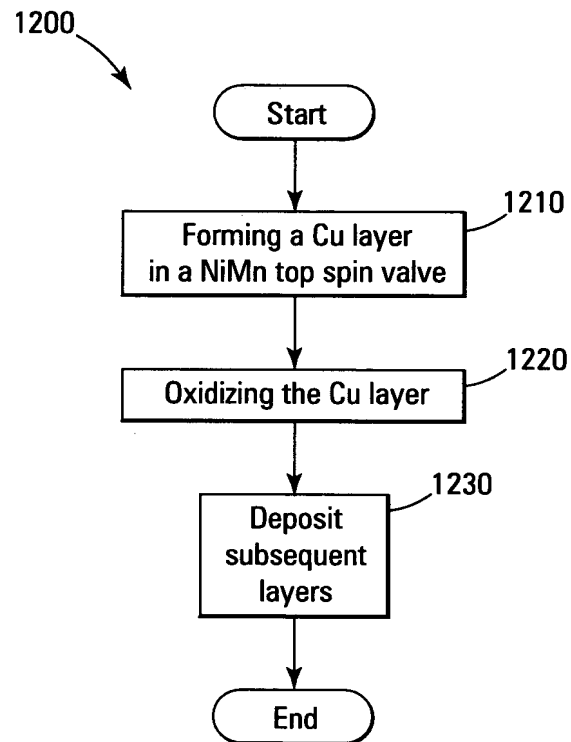


Fig. 12